

City of Huntington Beach

DEC 18 2007

## **TRAFFIC IMPACT ANALYSIS**

## **RAINBOW DISPOSAL PROJECT**

**Prepared by:**  
**Paul E. Cook & Associates**  
**(714)960-8298**

**December 2007**

# PAUL E. COOK AND ASSOCIATES

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December 12, 2007

Jerry Moffatt  
Rainbow Disposal Co.  
P.O. Box 1026  
Huntington Beach, CA 92647-1026

Subject: Traffic Analysis, Rainbow Disposal Project

Dear Mr. Moffatt,

The following is a traffic impact analysis for Baseline and proposed Project conditions at Rainbow Disposal in the City of Huntington Beach. This traffic analysis has been prepared because of a proposed increase in the allowable transfer station tonnage at the facility.

## I BASELINE CONDITIONS

The Baseline conditions include the following:

- Current refuse collection and disposal for the Cities of Huntington Beach and Fountain Valley.
- Current operation of a material recovery facility (MRF) and transfer station permitted at 2,800 tons per day.
- A new 20,800 square foot maintenance facility.
- A new 10,700 square foot bin repair shop.
- A new CNG fuel island.
- Implementation of a three-cart residential pickup system.

### Baseline Traffic Conditions

Table I shows the 3,023 average daily trips generated by Rainbow Disposal under Baseline conditions. Table 1 includes a breakdown of trips by type of vehicle, converted to passenger car equivalents (PCEs).

Based on information in the Highway Capacity Manual, passenger car equivalents (PCEs) for flat terrain were assigned as follows:

Passenger cars and light trucks	PCE = 1.0
Front-loaders, roll-off and rent-a-bin trucks (35 feet long)	PCE = 2.0
Transfer trucks (70 feet long)	PCE = 3.0

Table I is based on 24-hour surveys conducted daily of different types of vehicles entering the facility's driveways during the week of February 20, 2006. The surveys included employee vehicles parked on Nichols Street. Total trips (entering and exiting) were calculated based on the type of vehicle, the day of the week, time of day and their schedules. The new daily PCE

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trips generated by the three-cart system and the CNG facility are also included in Table I.

Under Baseline conditions, the AM peak hour is from 8:00 to 9:00 and accounts for approximately 8% (248) of the daily trips. The PM peak hour is from 4:00 to 5:00 pm and accounts for approximately 4% (131) of the daily trips. It should be noted that most employees enter or leave the facility before or after peak hours. Also, Rainbow Disposal schedules their vehicles to avoid traveling on arterial highways during peak traffic hours for time efficiency.

Peak hour traffic counts (see Appendix A) were conducted to determine existing conditions at six arterial intersections most heavily used by Rainbow Disposal. The six intersections are:

Warner Avenue and Goldenwest Street  
Warner Avenue and Gothard Street  
Warner Avenue and Nichols Street  
Warner Avenue and Beach Boulevard  
Slater Avenue and Gothard Street  
Slater Avenue and Nichols Street

Figure 1 shows existing geometric conditions at the six intersections. Figure 2 shows AM/PM peak hour traffic volumes for the six intersections under Baseline conditions including the three-cart system and CNG facility.

## II PROPOSED PROJECT

The proposed Project includes the following:

- Increase in the maximum allowed transfer station tonnage from the current 2,800 tons to a maximum of 4,000 tons.
- Increased use of the CNG fuel island above Baseline conditions.

### **Project Traffic Conditions**

The following describes the trip generation and trip distribution used to determine Project intersection impacts.

#### a. Trip Generation

Table II shows the 3,597 average daily trips generated by Rainbow Disposal under Baseline plus Project conditions. Table II includes a breakdown of trips by type of vehicle, converted to passenger car equivalents (PCEs).

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Trip generation for the Project is shown on Table III. The Project generates 574 new trips on an average day. Approximately 18% (106) are during the 8:00-9:00 AM peak hour and 6% (35) during the 4:00-5:00 PM peak hour. Trip generation was determined by Rainbow management analyzing the type of vehicles and the time they will be entering and leaving the facility to deliver or remove the additional 1,600 tons to be handled by the transfer station on an average day. The Project also includes 86 new trips to the CNG fuel island above Baseline conditions. 30 of these trips are in the AM peak hour.

b. Trip Distribution

Figure 3 shows the Project trips distributed through the six intersections during the AM and PM peak hours. The trip distribution was analyzed by Rainbow management and Paul Cook and Associates based on current patterns of movement to and from the facility for transfer station related traffic.

### **III BACKGROUND CONDITIONS**

The Baseline Conditions are analyzed based on 2006 surveys conducted at Rainbow Disposal and 2006 traffic counts taken at the six intersection that were analyzed. To analyze project impacts, the inclusion of traffic generated by growth is appropriate. Known as background traffic, it is expected that development in the area will add traffic to the intersections during the implementation of the proposed project.

Background traffic was determined by utilizing a growth factor of 1% per year. This growth factor includes vacant land proposed to be developed on the southeast corner of Nichols Street and Warner Avenue. Based on the nature of the proposed project, it was determined that five years or 2011 would be an appropriate future year to analyze as the background conditions.

Figure 5 shows the 2011 plus Project AM and PM peak hour traffic volumes. Table IV shows the intersection capacity utilization (ICU) analysis results for 2011 plus Project. Levels of service (LOS) remain the same as the analysis for Baseline plus Project at the six intersections.

### **IV INTERSECTION ANALYSIS**

This study analyzes traffic conditions at six intersections that are most impacted by Rainbow Disposal vehicles as listed previously. Figure 4 shows Baseline plus Project traffic volumes. Table IV shows the results of the traffic analysis for the Project using the Highway Capacity Manual Intersection Capacity Utilization (ICU) method. The worksheets for these analyses are included in Appendix B.

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The maximum increase in ICU is 0.02 in the AM peak hour at the intersection of Warner Avenue and Nichols Street and 0.01 in the PM peak hour at the intersections of Warner Avenue and Beach Boulevard and Slater Avenue and Nichols Street.

The Project does not change existing Levels of Service (LOS) except at the intersection of Warner and Beach where the ICU in the PM peak increases from 0.80 to 0.81 and changes the LOS from C to D.

The change in ICU at each of these six arterial intersections due to Rainbow's proposed Project is insignificant.

## V FINDINGS AND CONCLUSIONS

Rainbow Disposal's proposed increased transfer station tonnage to 4,000 allowable tons will increase average daily trips by 574, AM peak trips by 106 and PM peak trips by 35. These peak hour trips were distributed to six arterial intersections. The analysis results are shown in Table IV.

The results of the analysis shows the Project has no significant traffic impact.

Please contact me at (714) 960-8298 or [pcook2@socal.rr.com](mailto:pcook2@socal.rr.com) if you have any questions.

Sincerely,

Paul E. Cook



President

Cc: Chip Clements  
Dick Harlow

Attachments:

Appendix A - Intersection Traffic Counts  
Appendix B - ICU Worksheets



**TABLE I****Baseline Passenger Car Equivalents**

Hour	frontloaders	automated	rab	roll off	transfer	metal	dirt	recycle	green	public	employees	CNG	total
12 - 1a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
1 - 2a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
2 - 3a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
3 - 4a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
4 - 5a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 6a.m.	0	0	0	0	0	0	0	0	0	2	0	0	2
6 - 7a.m.	68	56	10	18	36	3	3	0	9	56	160	0	419
7 - 8a.m.	0	0	0	0	0	0	6	0	0	66	24	24	120
8 - 9a.m.	8	48	20	36	30	0	0	0	18	72	10	6	248
9 - 10a.m.	98	36	0	36	51	6	12	18	0	86	36	0	379
10 - 11a.m.	26	24	20	8	36	0	0	0	18	90	25	24	271
11 - 12p.m.	8	24	0	36	54	0	9	18	0	82	15	0	246
12 - 1p.m.	52	56	20	26	33	6	0	0	18	90	0	6	307
1 - 2p.m.	22	24	0	24	54	0	9	18	0	84	8	0	243
2 - 3p.m.	28	16	20	22	18	3	0	0	6	88	0	0	201
3 - 4p.m.	28	28	16	36	24	0	9	0	6	90	52	6	295
4 - 5p.m.	6	14	6	16	9	0	0	0	3	75	2	0	131
5 - 6p.m.	0	0	0	16	0	0	6	0	0	62	47	0	131
6 - 7p.m.	0	0	0	0	0	0	0	18	0	0	0	0	18
7 - 8p.m.	0	0	0	0	0	0	0	0	12	0	0	0	12
8 - 9p.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
9 - 10p.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
10 - 11p.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 12a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
total:	344	326	112	274	345	18	54	84	78	943	379	66	3023

**TABLE II****Baseline Plus Project Passenger Car Equivalents**

<b>Hours</b>	<b>frontloaders</b>	<b>automated</b>	<b>rab</b>	<b>roll off</b>	<b>transfer</b>	<b>metal</b>	<b>dirt</b>	<b>recycle</b>	<b>green</b>	<b>public</b>	<b>employee</b>	<b>CNG</b>	<b>total</b>
12 - 1a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
1 - 2a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
2 - 3a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
3 - 4a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
4 - 5a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 6a.m.	0	0	0	0	0	0	0	0	0	2	0	0	2
6 - 7a.m.	60	48	10	8	90	3	6	0	18	56	111	0	410
7 - 8a.m.	0	0	0	12	0	0	6	0	0	66	24	30	138
8 - 9a.m.	28	56	20	36	84	0	0	0	18	72	10	30	354
9 - 10a.m.	82	56	2	28	0	6	18	24	0	86	36	8	346
10 - 11a.m.	31	52	18	20	90	0	0	0	18	90	25	24	368
11 - 12p.m.	27	56	2	30	84	0	18	24	0	82	15	0	338
12 - 1p.m.	74	56	14	28	0	6	0	0	18	90	0	6	292
1 - 2p.m.	10	28	6	28	84	0	18	18	0	84	8	24	308
2 - 3p.m.	22	44	14	24	84	6	0	0	18	88	0	0	300
3 - 4p.m.	28	40	12	28	78	3	12	0	0	90	52	30	373
4 - 5p.m.	14	4	8	28	18	0	0	0	12	80	2	0	166
5 - 6p.m.	0	0	0	8	36	0	6	0	0	64	46	0	160
6 - 7p.m.	0	0	0	0	0	0	6	12	0	0	0	0	18
7 - 8p.m.	0	0	0	0	0	0	0	12	0	0	0	0	12
8 - 9p.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
9 - 10p.m.	0	0	0	0	0	0	0	12	0	0	0	0	12
10 - 11p.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 12a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>total:</b>	<b>376</b>	<b>440</b>	<b>106</b>	<b>278</b>	<b>648</b>	<b>24</b>	<b>90</b>	<b>102</b>	<b>102</b>	<b>950</b>	<b>329</b>	<b>152</b>	<b>3597</b>

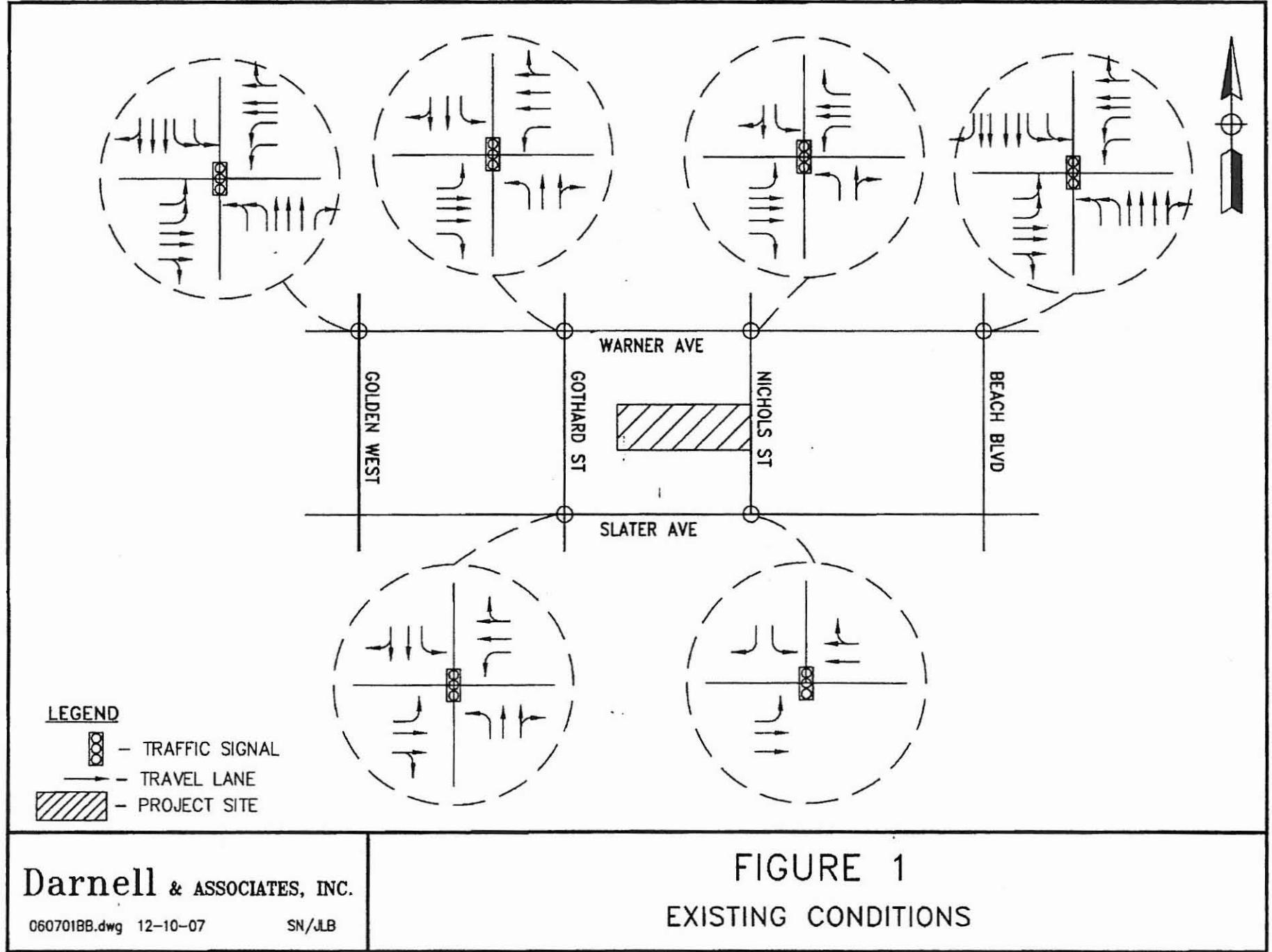
**TABLE III**  
**Project Passenger Car Equivalents**

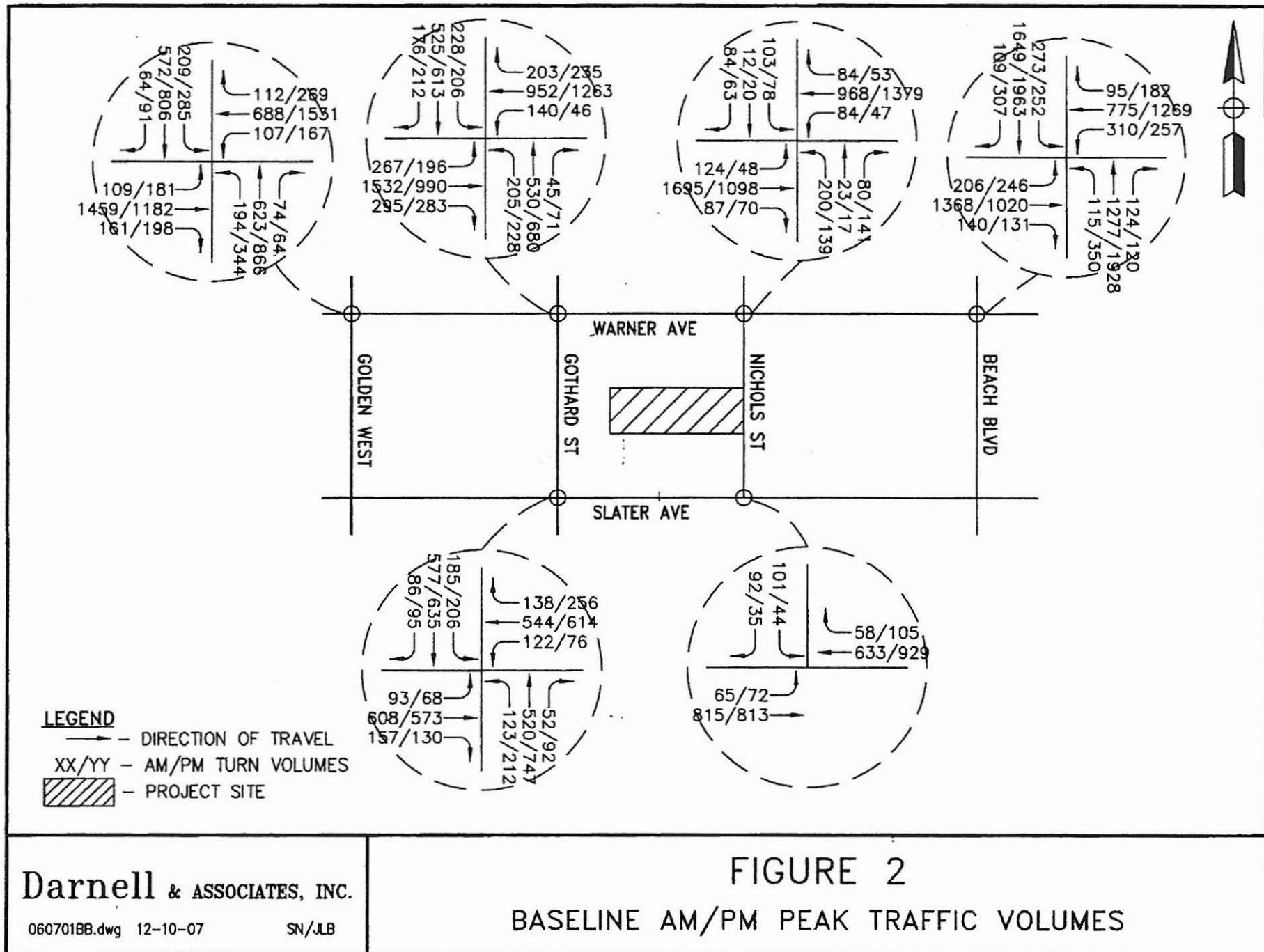
Hours	Baseline Plus Project PCE	Baseline PCE	Project PCE
12 - 1a.m.	0	0	0
1 - 2a.m.	0	0	0
2 - 3a.m.	0	0	0
3 - 4a.m.	0	0	0
4 - 5a.m.	0	0	0
5 - 6a.m.	2	2	0
6 - 7a.m.	410	419	-9
7 - 8a.m.	138	120	18
8 - 9a.m.	354	248	106
9 - 10a.m.	346	379	-33
10 - 11a.m.	368	271	97
11 - 12p.m.	338	246	92
12 - 1p.m.	292	307	-15
1 - 2p.m.	308	243	65
2 - 3p.m.	300	201	99
3 - 4p.m.	373	295	78
4 - 5p.m.	166	131	35
5 - 6p.m.	160	131	29
6 - 7p.m.	18	18	0
7 - 8p.m.	12	12	0
8 - 9p.m.	0	0	0
9 - 10p.m.	12	0	12
10 - 11p.m.	0	0	0
11 - 12a.m.	0	0	0
total:	3,597	3,023	574

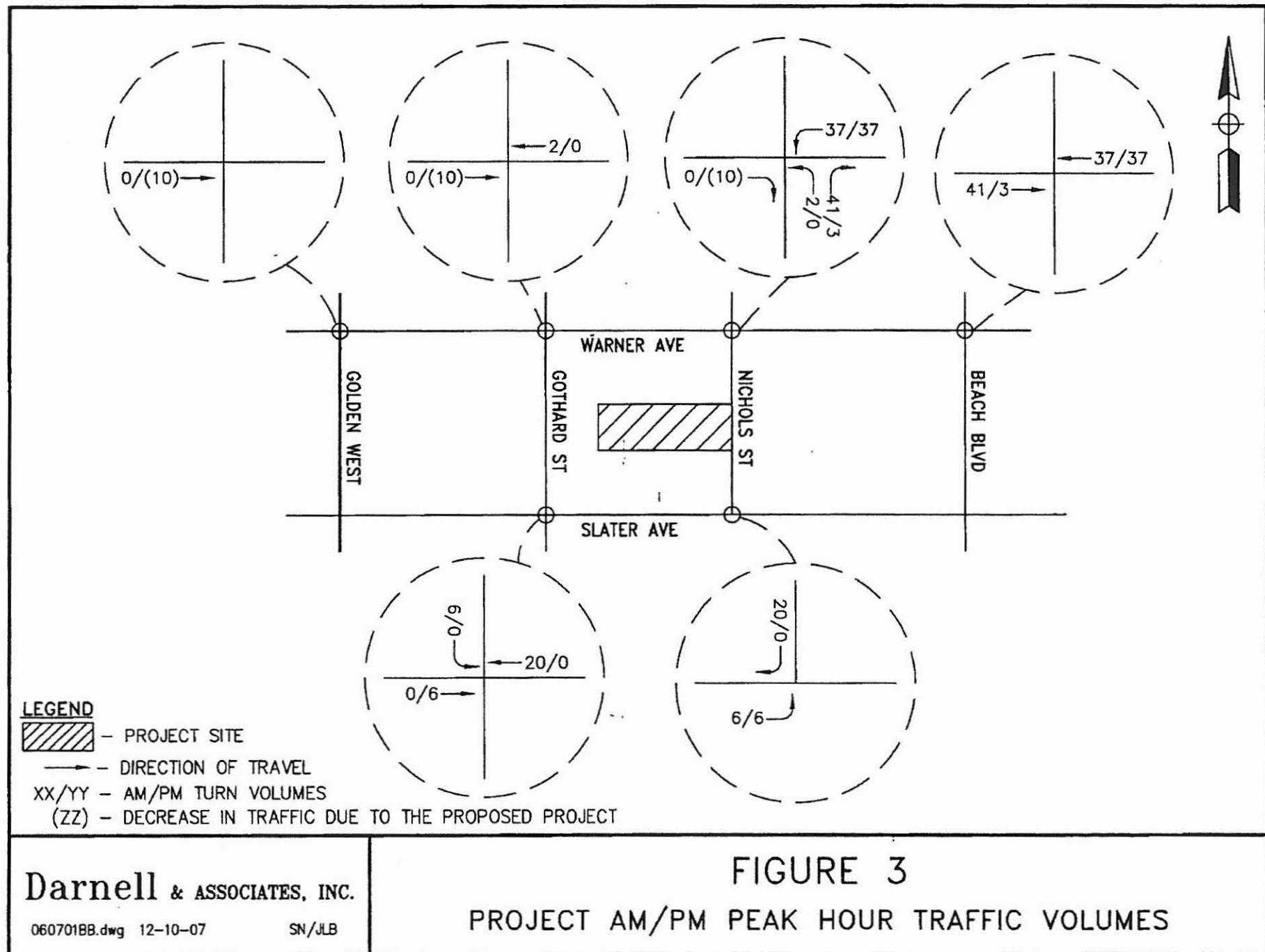
**Table IV - ICU Analysis**

Intersection	Traffic Control	Baseline				Baseline + Project				2011 + Project <sup>(a)</sup>			
		AM		PM		AM		PM		AM		PM	
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Warner Avenue (E-W)/ Golden West (N-S)	Sig	0.58	A	0.73	C	0.58	A	0.73	C	0.61	B	0.77	C
Warner Avenue (E-W)/ Gothard Street (N-S)	Sig	0.76	C	0.84	D	0.76	C	0.84	D	0.80	C	0.88	D
Warner Avenue (E-W)/ Nichols Street (N-S)	Sig	0.61	B	0.62	B	0.63	B	0.62	B	0.66	B	0.68	B
Warner Avenue (E-W)/ Beach Boulevard (N-S)	Sig	0.72	C	0.80	C	0.73	C	0.81	D	0.77	C	0.84	D
Slater Avenue (E-W)/ Gothard Street (N-S)	Sig	0.62	B	0.71	C	0.63	B	0.71	C	0.66	B	0.75	C
Slater Avenue (E-W)/ Nichols Street (N-S)	Sig	0.37	A	0.39	A	0.37	A	0.40	A	0.39	A	0.41	A

(a) 2011 volumes are based on a 1% growth per year on the baseline traffic volumes for a period of 5 years.  
 ICU= Intersection Capacity Utilization; LOS= level of service; E-W = east-west; N-S = north-south; Sig = signalized



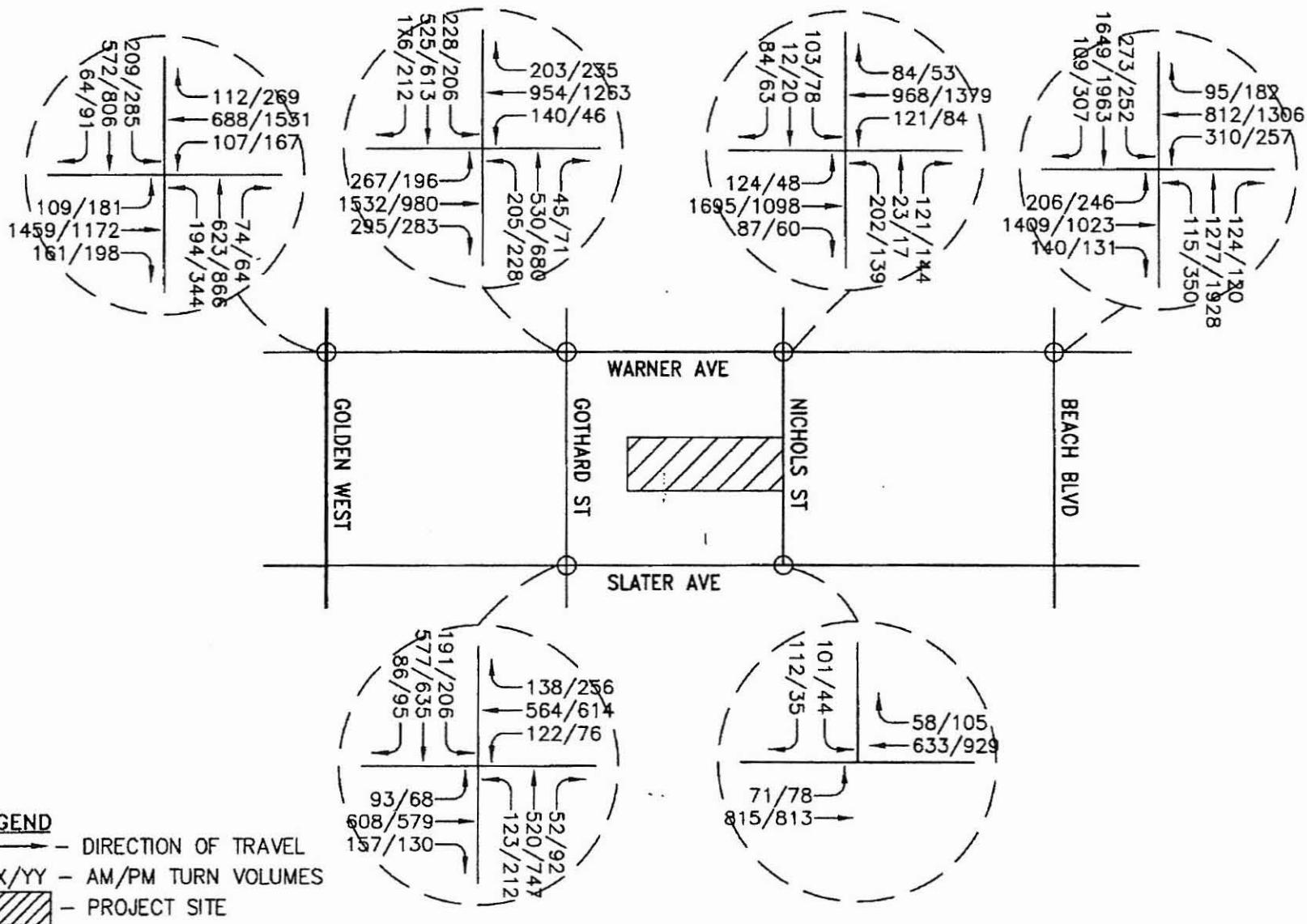




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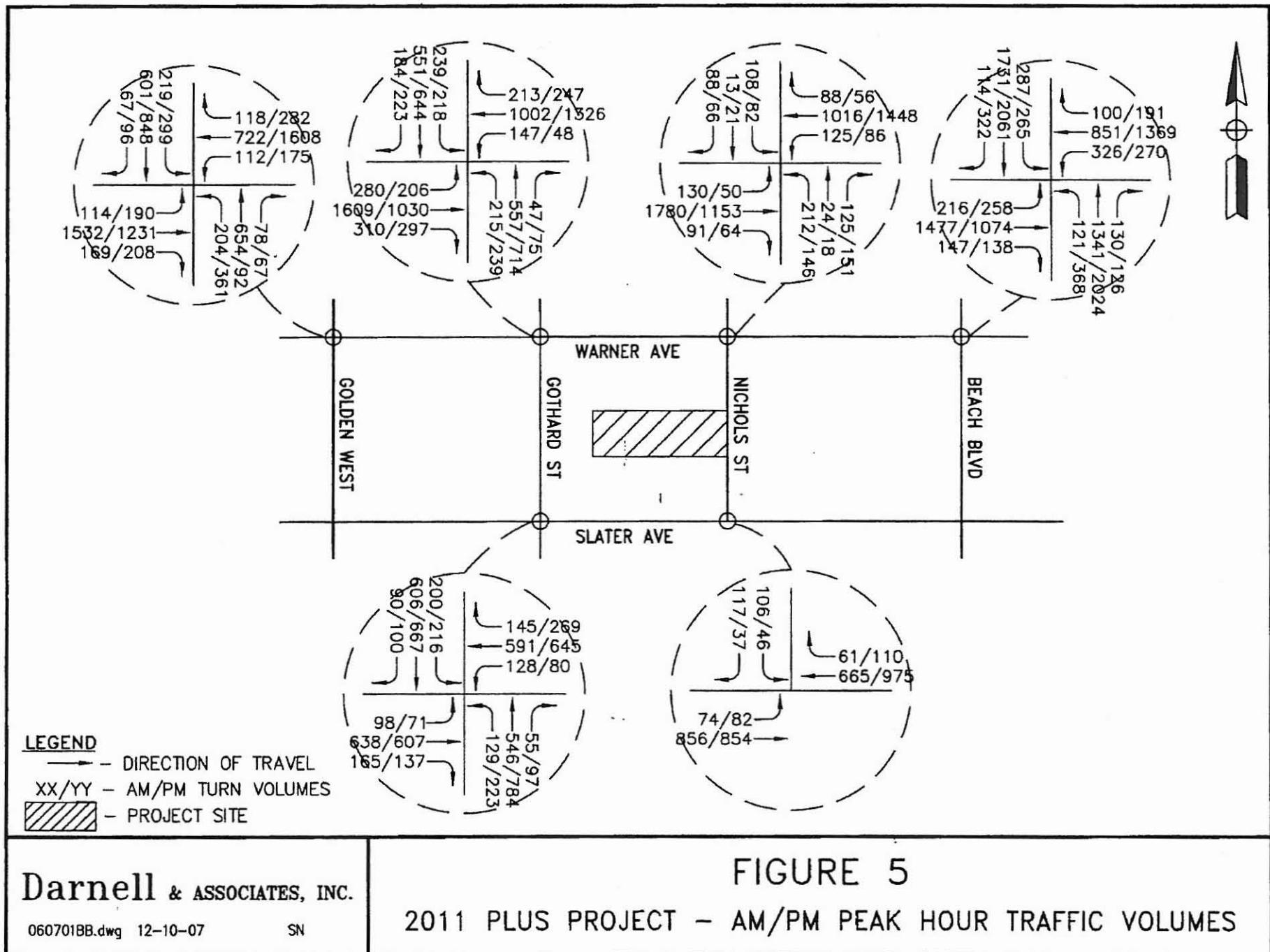


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**FIGURE 4**  
**BASELINE PLUS PROJECT - AM/PM PEAK HOUR TRAFFIC VOLUMES**



## APPENDIX A

### INTERSECTION TRAFFIC COUNTS

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Goldenwest St

DATE: 6/14/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT# 06-1185-003

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	22	118	10	29	114	9	18	326	33	17	109	23	828
7:15 AM	31	124	13	43	126	13	21	374	29	21	124	27	946
7:30 AM	58	139	16	59	157	17	26	392	46	25	122	35	1092
7:45 AM	40	156	22	55	146	13	24	387	40	30	143	29	1085
8:00 AM	47	160	17	49	138	15	29	356	31	21	154	25	1042
8:15 AM	49	168	19	46	131	19	30	324	44	31	159	23	1043
8:30 AM	42	147	21	32	133	12	33	318	37	27	144	21	972
8:45 AM	40	131	28	25	136	6	40	306	33	29	139	26	939
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	329	1143	146	338	1081	104	226	2783	293	201	1094	209	7947

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	194	623	74	209	572	64	109	1459	161	107	578	112	4262
PEAK HR. FACTOR:		0.944			0.907			0.932			0.935		0.976

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Goldenwest St

DATE: 6/14/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT# 06-1185-003

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	55	172	11	56	179	22	33	202	32	39	275	39	1115
4:15 PM	74	184	16	79	190	31	45	218	45	48	305	44	1279
4:30 PM	77	220	13	60	195	38	40	236	49	41	315	47	1331
4:45 PM	81	259	14	50	204	42	45	262	51	39	327	40	1414
5:00 PM	86	219	13	64	213	39	36	275	42	22	306	59	1434
5:15 PM	90	207	18	66	228	30	32	284	50	28	390	74	1497
5:30 PM	88	218	15	76	197	16	53	310	51	46	375	66	1511
5:45 PM	80	222	18	79	168	6	60	313	55	71	400	70	1542
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	631	1701	118	530	1574	224	344	2100	375	334	2753	439	11123

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	344	866	64	285	806	91	181	1182	198	167	1531	269	5984
PEAK HR. FACTOR:		0.992			0.912			0.912		0.909		0.970	

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Gothard St.

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT# 06-1265-003

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	24	96	3	20	81	22	29	419	26	22	212	20	974
7:15 AM	55	118	11	45	115	45	45	404	59	26	221	58	1202
7:30 AM	60	134	13	55	140	47	74	463	95	37	244	54	1416
7:45 AM	35	137	9	66	136	41	86	362	89	39	190	48	1238
8:00 AM	55	141	12	62	134	43	62	303	52	38	187	43	1132
8:15 AM	48	134	11	55	116	39	55	288	57	25	144	38	1010
8:30 AM	40	132	15	23	53	33	25	285	65	11	156	27	865
8:45 AM	44	133	10	29	51	36	29	250	58	12	145	31	828
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
<b>TOTAL VOLUMES =</b>	<b>361</b>	<b>1025</b>	<b>84</b>	<b>355</b>	<b>826</b>	<b>306</b>	<b>405</b>	<b>2774</b>	<b>501</b>	<b>210</b>	<b>1499</b>	<b>319</b>	<b>8665</b>

AM Peak Hr Begins at: 7:15 AM

PEAK VOLUMES =	205	530	45	228	525	176	267	1532	295	140	842	203	4988
PEAK HR. FACTOR:		0.938			0.956			0.828			0.884		0.881

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Gothard St.

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT# 06-1265-003

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	76	155	14	51	115	47	38	223	36	17	225	43	1040
4:15 PM	63	153	21	43	120	38	36	233	17	17	302	56	1099
4:30 PM	69	156	18	47	138	43	37	237	26	18	335	50	1174
4:45 PM	67	164	21	49	149	42	49	239	58	13	365	57	1273
5:00 PM	69	182	18	51	158	54	61	255	77	18	326	60	1329
5:15 PM	49	162	18	54	153	58	44	259	84	8	286	59	1234
5:30 PM	43	172	14	52	153	58	42	229	54	7	286	59	1179
5:45 PM	51	163	12	54	149	51	45	139	48	12	281	51	1056
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	487	1307	136	401	1135	391	352	1814	410	110	2406	435	9384

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	228	680	71	206	613	212	196	982	283	46	1263	235	5015
PEAK HR. FACTOR:		0.910			0.973			0.929			0.887		0.943

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Nichols St

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT# 06-1265-002

LANES:	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	NL 0	NT 2	NR 0	SL 0	ST 2	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL			
6:00 AM																
6:15 AM																
6:30 AM																
6:45 AM																
7:00 AM	18	5	13	16	4	17	26	269	24	17	222	18	649			
7:15 AM	24	11	11	18	3	18	39	358	26	24	215	23	770			
7:30 AM	22	3	14	19	2	21	36	541	23	29	293	22	1025			
7:45 AM	28	4	13	29	3	23	26	463	22	17	236	19	883			
8:00 AM	16	5	12	37	4	22	23	333	16	14	224	20	726			
8:15 AM	13	0	8	12	0	4	7	331	16	13	183	6	593			
8:30 AM	13	1	13	9	2	5	8	278	18	11	185	5	548			
8:45 AM	14	0	16	4	1	5	5	295	22	8	195	3	568			
9:00 AM																
9:15 AM																
9:30 AM																
9:45 AM																
10:00 AM																
10:15 AM																
10:30 AM																
10:45 AM																
11:00 AM																
11:15 AM																
11:30 AM																
11:45 AM																
<b>TOTAL VOLUMES =</b>	<b>148</b>	<b>29</b>	<b>100</b>	<b>144</b>	<b>19</b>	<b>115</b>	<b>170</b>	<b>2868</b>	<b>167</b>	<b>133</b>	<b>1753</b>	<b>116</b>	<b>5762</b>			

AM Peak Hr Begins at: 7:15 AM

PEAK VOLUMES =	90	23	50	103	12	84	124	1695	87	84	968	84	3404	
PEAK HR. FACTOR:			0.886			0.790			0.794		0.826		0.830	

CONTROL: Signalized

**Intersection Turning Movement**

Prepared by: Southland Car Counters

N-S STREET: Nichols St

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT# 06-1265-002

LANES:	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL			
1:00 PM																
1:15 PM																
1:30 PM																
1:45 PM																
2:00 PM																
2:15 PM																
2:30 PM																
2:45 PM																
3:00 PM																
3:15 PM																
3:30 PM																
3:45 PM																
4:00 PM	22	6	25	15	2	13	10	262	15	9	245	11	635			
4:15 PM	28	4	26	13	7	11	11	267	12	9	332	12	732			
4:30 PM	25	5	28	12	1	12	13	246	10	10	353	10	725			
4:45 PM	48	3	48	28	6	22	12	281	18	13	365	17	861			
5:00 PM	38	4	39	22	6	17	12	282	16	11	355	15	817			
5:15 PM	28	5	26	16	7	12	11	289	18	13	306	11	742			
5:30 PM	22	4	18	11	5	7	10	269	22	16	295	8	687			
5:45 PM	30	9	26	19	9	15	6	264	19	8	380	12	797			
6:00 PM																
6:15 PM																
6:30 PM																
6:45 PM																
<b>TOTAL VOLUMES =</b>	<b>241</b>	<b>40</b>	<b>236</b>	<b>136</b>	<b>43</b>	<b>109</b>	<b>85</b>	<b>2160</b>	<b>130</b>	<b>89</b>	<b>2631</b>	<b>96</b>	<b>5996</b>			

PM Peak Hr Begins at: 4:30 PM

PEAK VOLUMES =	139	17	141	78	20	63	48	1098	62	47	1379	53	3145	
PEAK HR. FACTOR:		0.750			0.719			0.950			0.936		0.913	

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Beach Blvd

DATE: 6/14/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT #: 06-1185-002

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 2	ET 2	ER 1	WL 2	WT 3	WR 0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	19	289	21	52	374	19	38	285	21	48	162	17	1345
7:15 AM	26	320	24	74	440	22	57	309	28	62	178	24	1564
7:30 AM	30	352	31	71	432	26	56	314	32	92	224	28	1688
7:45 AM	26	310	34	61	397	31	50	338	36	82	198	23	1586
8:00 AM	33	295	35	67	380	30	43	377	44	74	175	20	1573
8:15 AM	36	296	29	60	408	22	38	358	40	65	170	16	1538
8:30 AM	33	316	30	51	421	27	42	338	29	72	162	13	1534
8:45 AM	31	325	33	45	426	31	40	310	41	68	151	16	1517
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	234	2503	237	481	3278	208	364	2629	271	563	1420	157	12345

AM Peak Hr Begins at: 7:15 AM

PEAK VOLUMES =	115	1277	124	273	1649	109	206	1338	140	310	775	95	6411
PEAK HR. FACTOR:		0.918			0.947			0.907			0.858		0.949

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Beach Blvd

DATE: 6/14/2006

LOCATION: City of Huntington Beach

E-W STREET: Warner Ave

DAY: WEDNESDAY

PROJECT# 06-1185-002

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	52	389	26	35	399	61	60	209	26	48	258	37	1600
4:15 PM	59	410	32	40	418	68	78	228	33	67	262	44	1739
4:30 PM	68	424	40	53	447	74	90	236	40	72	280	78	1902
4:45 PM	88	406	43	73	422	67	78	265	42	54	293	67	1898
5:00 PM	93	378	36	86	417	69	51	310	36	45	309	79	1909
5:15 PM	91	461	35	66	494	80	65	257	31	67	319	55	2021
5:30 PM	89	580	29	54	541	86	71	238	36	76	326	28	2154
5:45 PM	77	509	20	46	511	72	59	215	28	69	315	20	1941
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	617	3557	261	453	3649	577	552	1958	272	498	2362	408	15164

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	350	1928	120	252	1963	307	246	1020	131	257	1269	182	8025
PEAK HR. FACTOR:		0.859			0.926			0.880			0.968		0.931

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Gothard St.

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Slater Ave.

DAY: WEDNESDAY

PROJECT# 06-1265-004

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	27	123	13	35	129	18	19	107	42	15	157	29	714
7:15 AM	25	110	10	37	139	28	16	137	37	16	170	30	755
7:30 AM	39	149	14	62	163	21	36	207	37	14	125	38	905
7:45 AM	32	138	15	51	146	19	22	157	41	17	92	41	771
8:00 AM	23	126	11	42	116	31	11	144	33	10	103	34	684
8:15 AM	21	129	17	48	108	32	21	145	38	12	96	31	698
8:30 AM	15	124	28	38	102	7	8	152	52	8	97	47	678
8:45 AM	18	109	27	26	89	9	12	133	46	13	89	41	612
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	200	1008	135	339	992	165	145	1182	326	105	929	291	5817

AM Peak Hr Begins at: 700 AM

PEAK VOLUMES =	123	520	52	185	577	86	93	608	157	62	544	138	3145
PEAK HR. FACTOR:		0.860			0.862			0.766			0.861		0.869

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Gothard St.

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Slater Ave.

DAY: WEDNESDAY

PROJECT# 06-1265-004

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	41	170	22	30	130	26	22	126	41	16	117	66	807
4:15 PM	37	182	19	33	147	22	21	132	36	22	166	67	884
4:30 PM	56	186	27	53	155	25	14	131	38	19	165	60	929
4:45 PM	55	188	24	50	162	20	16	154	29	16	134	69	917
5:00 PM	64	191	22	56	171	28	17	156	27	19	149	60	960
5:15 PM	58	147	24	37	140	24	22	126	40	13	144	57	832
5:30 PM	52	144	22	39	150	29	20	138	44	18	186	50	892
5:45 PM	41	146	27	36	127	12	9	130	25	13	172	56	794
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	404	1354	187	334	1182	186	141	1093	280	136	1233	485	7015

PM Peak Hr Begins at: 415 PM

PEAK VOLUMES =	212	747	92	192	635	95	68	573	130	76	614	256	3690
PEAK HR. FACTOR:		0.949			0.904			0.964			0.927		0.961

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Nichols St

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Slater Ave.

DAY: WEDNESDAY

PROJECT# 06-1265-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 0	NT 0	NR 0	SL 1	ST 0	SR 1	EL 1	ET 2	ER 0	WL 0	WT 2	WR 1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM				10		12	6	154		148	14	344	
7:15 AM				8		9	19	216		162	16	430	
7:30 AM				13		10	15	199		173	12	422	
7:45 AM				12		16	14	227		162	17	448	
8:00 AM				8		17	17	173		136	13	364	
8:15 AM				6		14	11	184		134	21	370	
8:30 AM				4		9	12	188		137	16	366	
8:45 AM				6		8	4	156		126	22	322	
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	NL 0	NT 0	NR 0	SL 67	ST 0	SR 95	EL 98	ET 1497	ER 0	WL 0	WT 1178	WR 131	TOTAL 3066

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	0	0	0	41	0	52	65	815	0	0	633	58	1664
PEAK HR. FACTOR:			0.000			0.830		0.913			0.934		0.929

CONTROL: Signalized

# Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Nichols St

DATE: 9/13/2006

LOCATION: City of Huntington Beach

E-W STREET: Slater Ave.

DAY: WEDNESDAY

PROJECT # 06-1265-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 0	NT 0	NR 0	SL 1	ST 0	SR 1	EL 1	ET 2	ER 0	WL 0	WT 2	WR 1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM				4		16	8	172		198	26	424	
4:15 PM				21		12	16	174		181	22	426	
4:30 PM				22		14	17	177		192	29	451	
4:45 PM				13		7	19	204		231	29	503	
5:00 PM				12		8	20	207		246	26	519	
5:15 PM				10		9	14	211		244	22	510	
5:30 PM				9		11	11	191		208	28	458	
5:45 PM				7		7	10	187		211	31	453	
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 0	NT 0	NR 0	SL 98	ST 0	SR 84	EL 115	ET 1523	ER 0	WL 0	WT 1711	WR 213	TOTAL 3744

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	0	0	0	44	0	35	64	813	0	0	929	105	1990
PEAK HR. FACTOR:		0.000			0.988			0.966			0.950		0.959

CONTROL: Signalized

## **APPENDIX B**

### **ICU WORKSHEETS**

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Golden West  
**DATE:** July 24, 2007  
**CONDITION:** Baseline  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		Volume	PM Peak	
				V/C	Critical Movement		V/C	Critical Movement
NL	2	3400	194	0.06	0	344	0.10	1
NR	1	1700	74	0.04	0	64	0.04	0
NT	3	5100	623	0.12	1	866	0.17	0
SL	2	3400	209	0.06	1	285	0.08	0
SR	0	0	64	0.00	0	91	0.00	0
ST	3	5100	572	0.12	0	806	0.18	1
EL	2	3400	109	0.03	0	181	0.05	1
ER	0	0	161	0.00	0	198	0.00	0
ET	3	5100	1459	0.32	1	1182	0.27	0
WL	2	3400	107	0.03	0	167	0.05	0
WR	0	0	112	0.00	0	269	0.00	0
WT	3	5100	688	0.16	1	1531	0.35	1

N/S component  
E/W component  
Rt.Tn. comp.  
Clearance Interval  
ICU  
LOS

0.18
0.35
0.00
0.05
<b>0.58</b>
A

0.28
0.41
0.00
0.05
<b>0.73</b>
C

Ten lanes for a right turn indicates free movement.  
NA - Not Applicable

0.00

Baseline

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Gothard Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak	
				V/C	Critical Movement	V/C	Critical Movement
NL	1	1700	205	0.12	TRUE	228	0.13
NR	0	0	45	0.00	FALSE	71	0.00
NT	2	3400	530	0.17	FALSE	680	0.22
SL	1	1700	228	0.13	FALSE	206	0.12
SR	0	0	176	0.00	FALSE	212	0.00
ST	2	3400	525	0.21	TRUE	613	0.24
EL	1	1700	267	0.16	TRUE	196	0.12
ER	1	1700	295	0.17	FALSE	283	0.17
ET	3	5100	1532	0.30	FALSE	990	0.19
WL	1	1700	140	0.08	FALSE	46	0.03
WR	0	0	203	0.00	FALSE	235	0.00
WT	3	5100	952	0.23	TRUE	1263	0.29

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.33
0.38
0.00
0.05
<b>0.76</b>
<b>C</b>

0.38
0.41
0.00
0.05
<b>0.84</b>
<b>D</b>

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

0.00

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Nichols Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak	
				V/C	Critical Movement	Volume	V/C
NL	1	1700	200	0.12	TRUE	139	0.08
NR	0	0	80	0.00	FALSE	141	0.00
NT	1	1700	23	0.06	FALSE	17	0.09
SL	1	1700	103	0.06	FALSE	78	0.05
SR	0	0	84	0.00	FALSE	63	0.00
ST	1	1700	12	0.06	TRUE	20	0.05
EL	1	1700	124	0.07	FALSE	48	0.03
ER	1	1700	87	0.05	FALSE	70	0.04
ET	3	5100	1695	0.33	TRUE	1098	0.22
WL	1	1700	84	0.05	FALSE	47	0.03
WR	1	1700	84	0.05	FALSE	53	0.03
WT	2	3400	968	0.28	TRUE	1379	0.41

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.17
0.38
0.00
0.05
<b>0.61</b>
<b>B</b>

0.14
0.43
0.00
0.05
<b>0.62</b>
<b>B</b>

Ten lanes for a right turn indicates free movement.

NA - Not Applicable

0.00

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Beach Blvd  
**DATE:** July 24, 2007  
**CONDITION:** Baseline  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		Volume	PM Peak	
				V/C	Critical Movement		V/C	Critical Movement
NL	2	3400	115	0.03	FALSE	350	0.10	TRUE
NR	0	0	124	0.00	FALSE	120	0.00	FALSE
NT	4	6800	1277	0.21	TRUE	1928	0.30	FALSE
SL	2	3400	273	0.08	TRUE	252	0.07	FALSE
SR	1	1700	109	0.06	FALSE	307	0.18	FALSE
ST	4	6800	1649	0.24	FALSE	1963	0.29	TRUE
EL	2	3400	206	0.06	FALSE	246	0.07	TRUE
ER	0	0	140	0.00	FALSE	131	0.00	FALSE
ET	3	5100	1368	0.30	TRUE	1020	0.23	FALSE
WL	2	3400	310	0.09	FALSE	257	0.08	FALSE
WR	0	0	95	0.00	FALSE	182	0.00	FALSE
WT	3	5100	775	0.17	TRUE	1269	0.28	TRUE

N/S component  
E/W component  
Rt.Tn. comp.  
Clearance Interval  
ICU  
LOS

0.29	0.39
0.39	0.36
0.00	0.00
0.05	0.05
<b>0.72</b>	<b>0.80</b>
C	C

Ten lanes for a right turn indicates free movement.  
NA - Not Applicable

0.00

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Slater Avenue @ Gothard Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak		Critical Movement
				V/C	Critical Movement	Volume	V/C	
NL	1	1700	123	0.07	FALSE	212	0.12	FALSE
NR	0	0	52	0.00	FALSE	92	0.00	FALSE
NT	2	3400	520	0.17	TRUE	747	0.25	TRUE
SL	1	1700	185	0.11	TRUE	206	0.12	TRUE
SR	0	0	86	0.00	FALSE	95	0.00	FALSE
ST	2	3400	577	0.20	FALSE	635	0.21	FALSE
EL	1	1700	93	0.05	FALSE	68	0.04	FALSE
ER	0	0	157	0.00	FALSE	130	0.00	FALSE
ET	2	3400	608	0.23	TRUE	573	0.21	TRUE
WL	1	1700	122	0.07	TRUE	76	0.04	FALSE
WR	0	0	138	0.00	FALSE	256	0.00	FALSE
WT	2	3400	544	0.20	FALSE	614	0.26	TRUE

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.28
0.30
0.00
0.05
<b>0.62</b>
B

0.37
0.30
0.00
0.05
<b>0.71</b>
C

Ten lanes for a right turn indicates free movement.

NA - Not Applicable

0.00

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Slater Avenue @ Nichols Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak	
				V/C	Critical Movement	Volume	V/C
NL	0	0	0	0.00	FALSE	0	0.00
NR	0	0	0	0.00	FALSE	0	0.00
NT	0	0	0	0.00	TRUE	0	0.00
SL	1	1700	101	0.06	TRUE	44	0.03
SR	1	1700	92	0.05	TRUE	35	0.02
ST	0	0	0	0.00	FALSE	0	0.00
EL	1	1700	65	0.04	FALSE	72	0.04
ER	0	0	0	0.00	FALSE	0	0.00
ET	2	3400	815	0.24	TRUE	813	0.24
WL	0	0	0	0.00	FALSE	0	0.00
WR	1	1700	58	0.03	FALSE	105	0.06
WT	2	3400	633	0.19	TRUE	929	0.27

N/S component  
E/W component  
Rt.Tn. comp.  
Clearance Interval  
ICU  
LOS

0.06	0.03
0.24	0.32
0.02	0.00
0.05	0.05
<b>0.37</b>	<b>0.39</b>
<b>A</b>	<b>A</b>

Ten lanes for a right turn indicates free movement.

NA - Not Applicable

0.00  
0.60  
0.61  
0.70  
0.71  
0.80  
0.81  
0.90  
0.91  
1.00  
1.01

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Golden West  
**DATE:** July 24, 2007  
**CONDITION:** Baseline Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak	
				V/C	Critical Movement	Volume	V/C
NL	2	3400	194	0.06	0	344	0.10
NR	1	1700	74	0.04	0	64	0.04
NT	3	5100	623	0.12	1	866	0.17
SL	2	3400	209	0.06	1	285	0.08
SR	0	0	64	0.00	0	91	0.00
ST	3	5100	572	0.12	0	806	0.18
EL	2	3400	109	0.03	0	181	0.05
ER	0	0	161	0.00	0	198	0.00
ET	3	5100	1459	0.32	1	1172	0.27
WL	2	3400	107	0.03	0	167	0.05
WR	0	0	112	0.00	0	269	0.00
WT	3	5100	688	0.16	1	1531	0.35

N/S component	0.18	0.28
E/W component	0.35	0.41
Rt.Tn. comp.	0.00	0.00
Clearance Interval	0.05	0.05
ICU	<b>0.58</b>	<b>0.73</b>
LOS	<b>A</b>	<b>C</b>

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Gothard Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		Volume	PM Peak	
				V/C	Critical Movement		V/C	Critical Movement
NL	1	1700	205	0.12	TRUE	228	0.13	TRUE
NR	0	0	45	0.00	FALSE	71	0.00	FALSE
NT	2	3400	530	0.17	FALSE	680	0.22	FALSE
SL	1	1700	228	0.13	FALSE	206	0.12	FALSE
SR	0	0	176	0.00	FALSE	212	0.00	FALSE
ST	2	3400	525	0.21	TRUE	613	0.24	TRUE
EL	1	1700	267	0.16	TRUE	196	0.12	TRUE
ER	1	1700	295	0.17	FALSE	283	0.17	FALSE
ET	3	5100	1532	0.30	FALSE	980	0.19	FALSE
WL	1	1700	140	0.08	FALSE	46	0.03	FALSE
WR	0	0	203	0.00	FALSE	235	0.00	FALSE
WT	3	5100	954	0.23	TRUE	1263	0.29	TRUE

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.33
0.38
0.00
0.05
<b>0.76</b>
<b>C</b>

0.38
0.41
0.00
0.05
<b>0.84</b>
<b>D</b>

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Nichols Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		Volume	PM Peak	
				V/C	Critical Movement		V/C	Critical Movement
NL	1	1700	202	0.12	TRUE	139	0.08	FALSE
NR	0	0	121	0.00	FALSE	144	0.00	FALSE
NT	1	1700	23	0.08	FALSE	17	0.09	TRUE
SL	1	1700	103	0.06	FALSE	78	0.05	TRUE
SR	0	0	84	0.00	FALSE	63	0.00	FALSE
ST	1	1700	12	0.06	TRUE	20	0.05	FALSE
EL	1	1700	124	0.07	FALSE	48	0.03	TRUE
ER	1	1700	87	0.05	FALSE	60	0.04	FALSE
ET	3	5100	1695	0.33	TRUE	1098	0.22	FALSE
WL	1	1700	121	0.07	FALSE	84	0.05	FALSE
WR	1	1700	84	0.05	FALSE	53	0.03	FALSE
WT	2	3400	968	0.28	TRUE	1379	0.41	TRUE

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.18
0.40
0.00
0.05
<b>0.63</b>
<b>B</b>

0.14
0.43
0.00
0.05
<b>0.62</b>
<b>B</b>

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Beach Blvd  
**DATE:** July 24, 2007  
**CONDITION:** Baseline Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		Volume	PM Peak	
				V/C	Critical Movement		V/C	Critical Movement
NL	2	3400	115	0.03	FALSE	350	0.10	TRUE
NR	0	0	124	0.00	FALSE	120	0.00	FALSE
NT	4	6800	1277	0.21	TRUE	1928	0.30	FALSE
SL	2	3400	273	0.08	TRUE	252	0.07	FALSE
SR	1	1700	109	0.06	FALSE	307	0.18	FALSE
ST	4	6800	1649	0.24	FALSE	1963	0.29	TRUE
EL	2	3400	206	0.06	FALSE	246	0.07	TRUE
ER	0	0	140	0.00	FALSE	131	0.00	FALSE
ET	3	5100	1409	0.30	TRUE	1023	0.23	FALSE
WL	2	3400	310	0.09	FALSE	257	0.08	FALSE
WR	0	0	95	0.00	FALSE	182	0.00	FALSE
WT	3	5100	812	0.18	TRUE	1306	0.29	TRUE

N/S component  
E/W component  
Rt.Tn. comp.  
Clearance Interval  
ICU  
LOS

0.29
0.39
0.00
0.05
<b>0.73</b>
<b>C</b>

0.39
0.36
0.00
0.05
<b>0.81</b>
<b>D</b>

Ten lanes for a right turn indicates free movement.  
NA - Not Applicable

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Slater Avenue @ Gothard Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak			PM Peak		
				V/C	Critical Movement	Volume	V/C	Critical Movement	
NL	1	1700	123	0.07	FALSE	212	0.12	FALSE	
NR	0	0	52	0.00	FALSE	92	0.00	FALSE	
NT	2	3400	520	0.17	TRUE	747	0.25	TRUE	
SL	1	1700	191	0.11	TRUE	206	0.12	TRUE	
SR	0	0	86	0.00	FALSE	95	0.00	FALSE	
ST	2	3400	577	0.20	FALSE	635	0.21	FALSE	
EL	1	1700	93	0.05	FALSE	68	0.04	FALSE	
ER	0	0	157	0.00	FALSE	130	0.00	FALSE	
ET	2	3400	608	0.23	TRUE	579	0.21	TRUE	
WL	1	1700	122	0.07	TRUE	76	0.04	FALSE	
WR	0	0	138	0.00	FALSE	256	0.00	FALSE	
WT	2	3400	564	0.21	FALSE	614	0.26	TRUE	

N/S component  
E/W component  
Rt.Tn. comp.  
Clearance Interval  
ICU  
LOS

0.28
0.30
0.00
0.05
<b>0.63</b>
<b>B</b>

0.37
0.30
0.00
0.05
<b>0.71</b>
<b>C</b>

Ten lanes for a right turn indicates free movement.  
NA - Not Applicable

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Slater Avenue @ Nichols Street  
**DATE:** July 24, 2007  
**CONDITION:** Baseline Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak		Critical Movement
				V/C	Critical Movement	V/C	Critical Movement	
NL	0	0	0	0.00	FALSE	0	0.00	FALSE
NR	0	0	0	0.00	FALSE	0	0.00	FALSE
NT	0	0	0	0.00	TRUE	0	0.00	TRUE
SL	1	1700	101	0.06	TRUE	44	0.03	TRUE
SR	1	1700	112	0.07	TRUE	78	0.05	TRUE
ST	0	0	0	0.00	FALSE	0	0.00	FALSE
EL	1	1700	71	0.04	FALSE	78	0.05	TRUE
ER	0	0	0	0.00	FALSE	0	0.00	FALSE
ET	2	3400	815	0.24	TRUE	813	0.24	FALSE
WL	0	0	0	0.00	FALSE	0	0.00	FALSE
WR	1	1700	58	0.03	FALSE	105	0.06	FALSE
WT	2	3400	633	0.19	TRUE	929	0.27	TRUE

N/S component  
E/W component  
Rt.Tn. comp.  
Clearance Interval  
ICU  
LOS

0.06
0.24
0.02
0.05
<b>0.37</b>
<b>A</b>

0.03
0.32
0.00
0.05
<b>0.40</b>
<b>A</b>

Ten lanes for a right turn indicates free movement.  
NA - Not Applicable

0.00  
0.60  
0.61  
0.70  
0.71  
0.80  
0.81  
0.90  
0.91  
1.00  
1.01

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Golden West  
**DATE:** December 5, 2007  
**CONDITION:** 2011 Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		Volume	PM Peak	
				V/C	Critical Movement		V/C	Critical Movement
NL	2	3400	204	0.06	0	361	0.11	1
NR	1	1700	78	0.05	0	67	0.04	0
NT	3	5100	654	0.13	1	92	0.02	0
SL	2	3400	219	0.06	- 1	299	0.09	0
SR	0	0	67	0.00	0	96	0.00	0
ST	3	5100	601	0.13	0	848	0.19	1
EL	2	3400	114	0.03	0	190	0.06	1
ER	0	0	169	0.00	0	208	0.00	0
ET	3	5100	1532	0.33	1	1231	0.28	0
WL	2	3400	112	0.03	0	175	0.05	0
WR	0	0	118	0.00	0	282	0.00	0
WT	3	5100	722	0.16	1	1608	0.37	1

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.19
0.37
0.00
0.05
<b>0.61</b>
<b>B</b>

0.29
0.43
0.00
0.05
<b>0.77</b>
<b>C</b>

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Gothard Street  
**DATE:** December 5, 2007  
**CONDITION:** 2011 Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	AM Peak			PM Peak		
			Volume	V/C	Critical Movement	Volume	V/C	Critical Movement
NL	1	1700	215	0.13	TRUE	239	0.14	TRUE
NR	0	0	47	0.00	FALSE	75	0.00	FALSE
NT	2	3400	557	0.18	FALSE	714	0.23	FALSE
SL	1	1700	239	0.14	FALSE	218	0.13	FALSE
SR	0	0	184	0.00	FALSE	223	0.00	FALSE
ST	2	3400	551	0.22	TRUE	644	0.26	TRUE
EL	1	1700	280	0.16	TRUE	206	0.12	TRUE
ER	1	1700	310	0.18	FALSE	297	0.17	FALSE
ET	3	5100	1609	0.32	FALSE	1030	0.20	FALSE
WL	1	1700	147	0.09	FALSE	48	0.03	FALSE
WR	0	0	213	0.00	FALSE	247	0.00	FALSE
WT	3	5100	1002	0.24	TRUE	1326	0.31	TRUE

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.34
0.40
0.00
0.05
<b>0.80</b>
<b>C</b>

0.40
0.43
0.00
0.05
<b>0.88</b>
<b>D</b>

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

0.00  
 0.60  
 0.61  
 0.70  
 0.71  
 0.80  
 0.81

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Nichols Street  
**DATE:** December 5, 2007  
**CONDITION:** 2011 Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak		Critical Movement
				V/C	Critical Movement	Volume	V/C	
NL	1	1700	212	0.12	TRUE	146	0.09	FALSE
NR	0	0	125	0.00	FALSE	151	0.00	FALSE
NT	1	1700	24	0.09	FALSE	56	0.12	TRUE
SL	1	1700	108	0.06	FALSE	82	0.05	TRUE
SR	0	0	88	0.00	FALSE	66	0.00	FALSE
ST	1	1700	13	0.06	TRUE	21	0.05	FALSE
EL	1	1700	130	0.08	FALSE	50	0.03	TRUE
ER	1	1700	91	0.05	FALSE	64	0.04	FALSE
ET	3	5100	1780	0.35	TRUE	1153	0.23	FALSE
WL	1	1700	125	0.07	FALSE	86	0.05	FALSE
WR	1	1700	88	0.05	FALSE	56	0.03	FALSE
WT	2	3400	1016	0.30	TRUE	1448	0.43	TRUE

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.18
0.42
0.00
0.05
<b>0.66</b>
<b>B</b>

0.17
0.46
0.00
0.05
<b>0.68</b>
<b>B</b>

Ten lanes for a right turn indicates free movement.

NA - Not Applicable

0.00  
 0.60  
 0.61  
 0.70  
 0.71  
 0.80  
 0.81

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Warner Avenue @ Beach Blvd  
**DATE:** December 5, 2007  
**CONDITION:** 2011 Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		Volume	PM Peak	
				V/C	Critical Movement		V/C	Critical Movement
NL	2	3400	121	0.04	FALSE	368	0.11	TRUE
NR	0	0	130	0.00	FALSE	126	0.00	FALSE
NT	4	6800	1341	0.22	TRUE	2024	0.32	FALSE
SL	2	3400	287	0.08	TRUE	265	0.08	FALSE
SR	1	1700	114	0.07	FALSE	322	0.19	FALSE
ST	4	6800	1731	0.25	FALSE	2061	0.30	TRUE
EL	2	3400	216	0.06	FALSE	258	0.08	TRUE
ER	0	0	147	0.00	FALSE	138	0.00	FALSE
ET	3	5100	1477	0.32	TRUE	1074	0.24	FALSE
WL	2	3400	326	0.10	FALSE	270	0.08	FALSE
WR	0	0	100	0.00	FALSE	191	0.00	FALSE
WT	3	5100	851	0.19	TRUE	1369	0.31	TRUE

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.30
0.41
0.00
0.05
<b>0.77</b>
<b>C</b>

0.41
0.38
0.00
0.05
<b>0.84</b>
<b>D</b>

Ten lanes for a right turn indicates free movement.

NA - Not Applicable

0.00  
 0.60  
 0.61  
 0.70  
 0.71  
 0.80  
 0.81

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Slater Avenue @ Gothard Street  
**DATE:** December 5, 2007  
**CONDITION:** 2011 Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak		PM Peak	
				V/C	Critical Movement	V/C	Critical Movement
NL	1	1700	129	0.08	FALSE	223	0.13
NR	0	0	55	0.00	FALSE	97	0.00
NT	2	3400	546	0.18	TRUE	784	0.26
SL	1	1700	200	0.12	TRUE	216	0.13
SR	0	0	90	0.00	FALSE	100	0.00
ST	2	3400	606	0.20	FALSE	667	0.23
EL	1	1700	98	0.06	FALSE	71	0.04
ER	0	0	165	0.00	FALSE	137	0.00
ET	2	3400	638	0.24	TRUE	607	0.22
WL	1	1700	128	0.08	TRUE	80	0.05
WR	0	0	145	0.00	FALSE	269	0.00
WT	2	3400	591	0.22	FALSE	645	0.27

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.29	0.39
0.31	0.31
0.00	0.00
0.05	0.05
<b>0.66</b>	<b>0.75</b>
B	C

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

0.00  
 0.60  
 0.61  
 0.70  
 0.71  
 0.80  
 0.81

**INTERSECTION CAPACITY UTILIZATION  
WORKSHEET**

**INTERSECTION:** Slater Avenue @ Nichols Street  
**DATE:** December 5, 2007  
**CONDITION:** 2011 Plus Project  
**LANE CAPACITY:** 1,700

Movement	Number of Lanes	Lane Capacity	Volume	AM Peak			PM Peak		
				V/C	Critical Movement	Volume	V/C	Critical Movement	
NL	0	0	0	0.00	FALSE	0	0.00	FALSE	
NR	0	0	0	0.00	FALSE	0	0.00	FALSE	
NT	0	0	0	0.00	TRUE	0	0.00	TRUE	
SL	1	1700	106	0.06	TRUE	46	0.03	TRUE	
SR	1	1700	117	0.07	TRUE	37	0.02	TRUE	
ST	0	0	0	0.00	FALSE	0	0.00	FALSE	
EL	1	1700	74	0.04	FALSE	82	0.05	TRUE	
ER	0	0	0	0.00	FALSE	0	0.00	FALSE	
ET	2	3400	856	0.25	TRUE	854	0.25	FALSE	
WL	0	0	0	0.00	FALSE	0	0.00	FALSE	
WR	1	1700	61	0.04	FALSE	110	0.06	FALSE	
WT	2	3400	665	0.20	TRUE	975	0.29	TRUE	

N/S component  
 E/W component  
 Rt.Tn. comp.  
 Clearance Interval  
 ICU  
 LOS

0.06	0.03
0.25	0.34
0.03	0.00
0.05	0.05
<b>0.39</b>	<b>0.41</b>
<b>A</b>	<b>A</b>

Ten lanes for a right turn indicates free movement.  
 NA - Not Applicable

0.00  
 0.60  
 0.61  
 0.70  
 0.71  
 0.80  
 0.81